Statistical Bulletin
METROPOLITAN LIFE INSURANCE COMPANY
Volume 42 October 1961

## The 1961 Company Award for Safety Research

THE 1961 Metropolitan Life Award for Research in Accident Prevention was won by Dr. J. Stannard Baker, director of Research and Development for the Traffic Institute at Northwestern University. Administered by the National Safety Council, the award of $1,000 was made to Dr. Baker for his research project "Case Studies of Traffic Accidents," which had been supported by the U. S. Public Health Service, the U. S. Bureau of Public Roads, and the Automotive Safety Foundation.

The major objective of the project was the development of improved methods for determining how and why traffic accidents occur. Various approaches were used to attack the problem. One phase of the study entailed first-hand intensive investigation of individual accidents by an interdisciplinary team of scientists. The team, consisting of an engineer, a physician, and a behavioral scientist—at first a psychologist and later a sociologist — was called by the Evanston, Illinois, Police Department to the scene of accidents minutes after they occurred. The scientists interviewed persons involved in each traffic accident and later spent considerable time making detailed measurements of the road, inspecting traffic control devices, giving drivers or pedestrians physical examinations and psychological tests, and partially disassembling the cars.

After collecting the data, the team members formed independent opinions regarding the causative factors in the accident and then, in conference, combined their ideas. Altogether, 68 subjects in 51 accidents were studied and a total of 289 contributory conditions were identified. The interdisciplinary team developed a set of 20 data-collecting forms and shortcut methods for preparing time-space diagrams of traffic accidents.

A second phase of the study was carried on independently by other investigators connected with the project. This group analyzed concepts regarding the causative factors in traffic accidents derived from the information developed by the investigating team and from a

review of published sources. The purpose of this work was to develop a classification system which could be used to guide systematic analysis of traffic accidents. A compilation was made of more than 850 factors which could contribute to such accidents.

A third approach focused attention on errors to be guarded against when one attempts to reconstruct the events leading to a traffic accident. This phase of the study indicated the need for special technical training of persons who undertake to determine the causes of traffic accidents. An experiment was conducted in which engineers, insurance adjustors, and police—persons with experience in routine investigation of accidents but without special training in scientific analysis—and groups of laymen were asked to determine who was at fault in a head-on collision when adequate data for making a correct decision were supplied to the persons tested. The experienced groups were not significantly more successful than the laymen in giving correct answers. In connection with this phase of the project, a special report, "Limitations of Accident Reconstruction," was prepared. It specifies the conditions limiting reliability of conclusions and describes ways of evaluating reliability.

Dr. Baker's studies should be useful as both a practical and a theoretical guide to future investigations in the field of traffic accidents.

## Hospital Utilization in an Industrial Area: Surgical Cases*

BECAUSE of the current widespread interest in health insurance, the Metropolitan Life Insurance Company has made an intensive study of the hospital and surgical claims it paid in March-August 1959 under Group Health insurance contracts held by six large corporations in the Pittsburgh area. Various considerations prompted the selection of that locality for study: the Metropolitan has a substantial volume of Group Health insurance in and around Pittsburgh; the six Group policyholders were keenly interested in such study; and the hospitals and physicians in the area offered their full cooperation.

The Group Health insurance contracts covered both employees—mainly clerical and operative—and their dependents under several different benefit programs. Table 1 shows, for each type of claimant, the number of cases hospitalized for surgery and the average duration of hospital stay. The period of hospitalization was appreciably greater for male than for female employees, averaging 11.9 days and 8.7 days per case, respectively.

*The hospitalization of nonsurgical cases will be discussed in the next issue of the *Statistical Bulletin*.

**TABLE 1—NUMBER OF CASES HOSPITALIZED FOR SURGERY AND LENGTH OF HOSPITAL STAY**
By Status of Claimant. Experience of Six Large Corporations in the Pittsburgh Area Covered by Group Health Insurance in the Metropolitan Life Insurance Company March Through August 1959

| Status of Claimant; Age and Sex | Number of Cases | Average Hospital Stay, in Days | Status of Claimant; Age and Sex | Number of Cases | Average Hospital Stay, in Days |
|---|---|---|---|---|---|
| All Surgical Cases | 4,527 | 8.4 | Dependents | | |
| | | | Wives—total | 1,499 | 10.1 |
| Employees | | | Under age 24 | 50 | 4.8 |
| Male—total* | 1,196 | 11.9 | 24-39 years | 576 | 7.5 |
| Under age 24 | 19 | 6.1 | 40 and over | 873 | 12.1 |
| 24-39 years | 303 | 8.1 | | | |
| 40 and over | 841 | 13.4 | | | |
| | | | Children—total | 1,655 | 4.1 |
| Female—total | 177 | 8.7 | Under age 6 | 606 | 4.1 |
| Single | 139 | 8.7 | 6-14 years | 852 | 3.8 |
| Married | 38 | 8.9 | 15 and over | 197 | 5.9 |

*Includes 33 dependent husbands of female employees.

There was practically no difference, however, in length of stay between single and married female employees. The average length of hospital stay for dependent wives —10.1 days per case—was moderately greater than that for female employees but somewhat less than that for male employees.

Hospital stay increased progressively with advance in age among both male employees and dependent wives. Among male employees the average period of hospitalization increased from 6.1 days under age 24 to 13.4 days at ages 40 and over; for dependent wives the corresponding rise was from 4.8 to 12.1 days. Children hospitalized for surgery stayed an average of 4.1 days, a much shorter time than spent by adults.

The relative frequency and the average hospital stay for various types of surgery are shown in Table 2. Operations of the eye, ear, nose, and throat were the leading category, mainly because of the relatively large number of tonsillectomies and/or adenoidectomies. These two surgical procedures accounted for somewhat over one fifth of all hospitalized surgical cases in this study, but required the shortest hospital stay, averaging 2.0 days per case. Hospitalization for eye surgery averaged 7.5 days; for five cases of detached retina the average was 20.6 days.

General surgery ranked second in numerical importance, accounting for nearly one fifth of all surgical cases in this insurance experience. The majority of cases in this category involved either endoscopy or the removal of benign tumors or

cysts. There were relatively few cases of bronchoscopy, but they required an average stay of 14.8 days, while hospitalization for surgery of benign tumors or cysts was only 5.4 days.

About 1 in every 7 surgical cases was for abdominal conditions, very largely hernia operations or operations for the removal of the appendix or gallbladder. The average period of hospitalization for abdominal operations as a group was 12.7 days; for removal of the gallbladder the average was 16.7 days.

Gynecological operations comprised about one third of the surgical cases among the women in this study. The most common surgical procedures in this category were dilatation and curettage, and hysterectomy, the average hospital periods being 6.0 days and 13.3 days, respectively.

Only brief mention need be made of the other types of surgery listed in Table 2. Proctological and urological surgery, and operations

**TABLE 2—NUMBER OF CASES HOSPITALIZED FOR SPECIFIED TYPES OF SURGERY AND LENGTH OF HOSPITAL STAY**

Experience of Six Large Corporations in the Pittsburgh Area Covered by Group Health Insurance in the Metropolitan Life Insurance Company March Through August 1959

| Body System; Specified Type of Surgery | Number of Cases | Average Hospital Stay, in Days | Body System; Specified Type of Surgery | Number of Cases | Average Hospital Stay, in Days |
|---|---|---|---|---|---|
| All Surgical Cases | 4,527 | 8.4 | Gynecology—total | 565 | 9.0 |
| | | | Dilatation and curettage | 261 | 6.0 |
| Eye, ear, nose, and throat—total | 1,387 | 2.7 | Hysterectomy | 155 | 13.3 |
| Nose and throat | 1,053 | 2.1 | | | |
| Tonsillectomy and/or adenoidectomy | 999 | 2.0 | Proctology and urology—total | 393 | 10.6 |
| Mouth | 189 | 3.1 | Proctological surgery | 202 | 9.0 |
| Eye | 103 | 7.5 | Hemorrhoid operations | 160 | 9.0 |
| Ear | 42 | 5.0 | Urological surgery | 191 | 12.3 |
| | | | Circumcision | 90 | 5.8 |
| General surgery—total | 854 | 9.1 | Prostatectomy | 35 | 21.8 |
| Endoscopy | 299 | 9.5 | | | |
| Cystoscopy | 201 | 8.7 | Musculoskeletal system—total | 382 | 11.1 |
| Bronchoscopy | 29 | 14.8 | Fractures | 154 | 10.4 |
| Laryngoscopy | 27 | 6.3 | Skull and facial bones | 17 | 6.5 |
| Tumors or cysts | 260 | 6.4 | Upper extremities | 61 | 4.4 |
| Benign | 185 | 5.4 | Lower extremities | 56 | 17.4 |
| Glands* | 97 | 9.8 | Joints | 68 | 15.9 |
| | | | | | |
| Abdomen—total | 694 | 12.7 | Other and unspecified—total | 252 | 15.8 |
| Hernia operations | 274 | 9.6 | Heart and blood vessels | 108 | 13.0 |
| Appendectomy | 180 | 9.1 | Veins | 87 | 10.4 |
| Cholecystectomy | 122 | 16.7 | Arteries | 13 | 22.8 |
| | | | Heart | 8 | 24.8 |
| | | | Neurosurgery | 75 | 21.3 |

*Excludes 64 cases of benign tumors and cysts of the mammary glands, which are included with benign tumors and cysts.

**TABLE 3—NUMBER OF HOSPITALIZED SURGICAL CASES USING HOSPITAL SPECIAL SERVICES**
Experience of Six Large Corporations in the Pittsburgh Area
Covered by Group Health Insurance in the Metropolitan Life Insurance Company
March Through August 1959

| Special Service | Number of Cases | Percent of Total | Special Service | Number of Cases | Percent of Total |
|---|---|---|---|---|---|
| All Surgical Cases | 4,527 | 100 | | | |
| | | | Anesthesia | 3,957 | 87 |
| Laboratory | 4,422 | 98 | X-ray diagnosis | 2,161 | 48 |
| Operating room | 4,300 | 95 | Electrocardiogram | 735 | 16 |
| Drugs | 3,970 | 88 | Blood | 425 | 9 |

involving the musculoskeletal system each accounted for somewhat less than 10 percent of the surgical cases in this experience. Urological surgery was only slightly less frequent than surgery for proctological conditions but required an appreciably greater period of hospitalization, the averages being 12.3 days and 9.0 days, respectively. Fractures were the most common conditions treated in musculoskeletal surgery. There are wide differences, however, in the average hospital stay according to the part of the body affected; the average stay for fractures of the upper extremities was 4.4 days, but for fractures of the lower extremities it was 17.4 days.

The residual category of surgical cases is noteworthy for the relatively long periods of hospitalization—an average of more than 20 days per case—required by arterial and cardiac surgery as well as by neurosurgery.

Table 3 shows the number of surgical cases that received hospital special services. All but a small proportion of the cases utilized laboratory and operating room services; nearly 90 percent of the cases used drugs and anesthesia. Close to half of the surgical patients had X-ray diagnostic service; appreciably smaller proportions utilized such hospital special services as electrocardiograms or blood transfusions.

## A Decade of Population Growth: White and Nonwhite

THE nonwhite population in the United States grew more rapidly than the white during the 1950's. While white persons in the 50 States and the District of Columbia increased 17.5 percent in the decade, the number of nonwhites grew as much as 26.7 percent. As a result, the nonwhite proportion of the total population rose from 10.7 percent in 1950 to 11.4 percent in 1960.

## RESIDENT POPULATION CHANGE BY COLOR, UNITED STATES, 1950-1960

(Number in Thousands)

| Area | Population, April 1, 1960 | | | April 1950 to April 1960* | | | |
|---|---|---|---|---|---|---|---|
| | | | | Percent Change in Population | | Net Total Migration† | |
| | White | Nonwhite | Percent Nonwhite | White | Nonwhite | White | Nonwhite |
| UNITED STATES | 158,832 | 20,491 | 11.4 | 17.5 | 26.7 | 2,712 | — 23 |
| New England | 10,242 | 267 | 2.5 | 11.8 | 74.2 | — 50 | 70 |
| Maine | 963 | 6 | .6 | 5.8 | 104.0 | — 68 | 2 |
| New Hampshire | 604 | 3 | .4 | 13.5 | 167.5 | 11 | 1 |
| Vermont | 389 | 1 | .2 | 3.2 | 41.1 | — 38 | 0 |
| Massachusetts | 5,023 | 125 | 2.4 | 8.9 | 58.8 | —122 | 25 |
| Rhode Island | 839 | 21 | 2.4 | 7.9 | 39.6 | — 28 | 2 |
| Connecticut | 2,424 | 111 | 4.4 | 24.1 | 102.8 | 195 | 39 |
| Middle Atlantic | 31,280 | 2,888 | 8.5 | 10.8 | 50.0 | —149 | 473 |
| New York | 15,287 | 1,495 | 8.9 | 10.2 | 56.1 | — 69 | 283 |
| New Jersey | 5,539 | 528 | 8.7 | 22.8 | 63.0 | 467 | 112 |
| Pennsylvania | 10,454 | 865 | 7.6 | 6.1 | 34.3 | —547 | 78 |
| East North Central | 33,253 | 2,972 | 8.2 | 16.5 | 60.1 | 183 | 522 |
| Ohio | 8,910 | 797 | 8.2 | 19.9 | 53.7 | 277 | 133 |
| Indiana | 4,389 | 274 | 5.9 | 16.8 | 55.9 | 18 | 45 |
| Illinois | 9,010 | 1,071 | 10.6 | 12.0 | 60.8 | — 61 | 189 |
| Michigan | 7,086 | 737 | 9.4 | 19.7 | 62.4 | 30 | 127 |
| Wisconsin | 3,859 | 93 | 2.4 | 13.7 | 121.7 | — 81 | 29 |
| West North Central | 14,749 | 645 | 4.2 | 8.6 | 32.9 | —856 | 37 |
| Minnesota | 3,372 | 42 | 1.2 | 14.1 | 46.8 | —101 | 4 |
| Iowa | 2,729 | 29 | 1.0 | 5.0 | 33.9 | —235 | 3 |
| Missouri | 3,923 | 397 | 9.2 | 7.3 | 32.7 | —158 | 28 |
| North Dakota | 620 | 13 | 2.0 | 1.8 | 15.4 | —103 | — 2 |
| South Dakota | 653 | 27 | 4.0 | 3.9 | 13.1 | — 90 | — 5 |
| Nebraska | 1,375 | 37 | 2.6 | 5.6 | 51.2 | —121 | 4 |
| Kansas | 2,079 | 100 | 4.6 | 13.7 | 30.9 | — 48 | 5 |
| South Atlantic | 20,047 | 5,924 | 22.8 | 25.0 | 15.2 | 1,194 | —542 |
| Delaware | 384 | 62 | 13.9 | 40.3 | 40.2 | 57 | 6 |
| Maryland | 2,574 | 527 | 17.0 | 31.7 | 35.8 | 285 | 36 |
| District of Columbia | 345 | 419 | 54.8 | —33.3 | 47.3 | —213 | 54 |
| Virginia | 3,142 | 825 | 20.8 | 21.7 | 11.9 | 85 | — 70 |
| West Virginia | 1,770 | 90 | 4.9 | — 6.4 | —21.7 | —406 | — 40 |
| North Carolina | 3,399 | 1,157 | 25.4 | 14.0 | 7.2 | —120 | —207 |
| South Carolina | 1,551 | 832 | 34.9 | 19.9 | 1.0 | — 4 | —218 |
| Georgia | 2,817 | 1,126 | 28.6 | 18.3 | 5.8 | — 8 | —204 |
| Florida | 4,064 | 888 | 17.9 | 87.6 | 46.7 | 1,517 | 101 |
| East South Central | 9,339 | 2,711 | 22.5 | 6.5 | .2 | —845 | —620 |
| Kentucky | 2,820 | 218 | 7.2 | 2.8 | 7.6 | —374 | — 15 |
| Tennessee | 2,978 | 589 | 16.5 | 7.9 | 10.9 | —217 | — 57 |
| Alabama | 2,284 | 983 | 30.1 | 9.8 | .1 | —144 | —224 |
| Mississippi | 1,258 | 921 | 42.3 | 5.8 | — 7.0 | —110 | —323 |
| West South Central | 14,090 | 2,861 | 16.9 | 17.1 | 14.4 | —287 | —295 |
| Arkansas | 1,396 | 391 | 21.9 | — 5.8 | — 8.7 | —283 | —150 |
| Louisiana | 2,212 | 1,045 | 32.1 | 23.1 | 17.9 | 42 | — 92 |
| Oklahoma | 2,108 | 220 | 9.5 | 3.7 | 9.7 | —192 | — 26 |
| Texas | 8,375 | 1,205 | 12.6 | 24.5 | 22.4 | 146 | — 26 |
| Mountain | 6,514 | 341 | 5.0 | 34.4 | 48.6 | 550 | 8 |
| Montana | 651 | 24 | 3.6 | 13.8 | 26.6 | — 23 | — 2 |
| Idaho | 657 | 10 | 1.5 | 13.1 | 35.4 | — 40 | 1 |
| Wyoming | 323 | 7 | 2.2 | 13.7 | 9.6 | — 18 | — 1 |
| Colorado | 1,701 | 53 | 3.0 | 31.2 | 87.3 | 150 | 15 |
| New Mexico | 876 | 75 | 7.9 | 39.0 | 47.6 | 53 | — 2 |
| Arizona | 1,170 | 133 | 10.2 | 78.7 | 39.5 | 340 | — 10 |
| Utah | 874 | 17 | 1.9 | 29.1 | 40.5 | 9 | 1 |
| Nevada | 263 | 22 | 7.7 | 75.7 | 114.6 | 80 | 6 |
| Pacific | 19,316 | 1,882 | 8.9 | 38.6 | 59.7 | 2,972 | 224 |
| Washington | 2,752 | 102 | 3.6 | 18.8 | 62.5 | 71 | 18 |
| Oregon | 1,732 | 37 | 2.1 | 15.7 | 51.4 | 11 | 6 |
| California | 14,455 | 1,262 | 8.0 | 45.8 | 88.1 | 2,789 | 353 |
| Alaska | 175 | 52 | 22.8 | 88.1 | 44.1 | 46 | — 1 |
| Hawaii | 202 | 431 | 68.0 | 76.2 | 11.8 | 55 | — 52 |

*Minus sign ( —) denotes loss.

†Comprises net in-migrants from abroad, net interstate migration, and movement of persons in the Armed Forces.

Note: Each figure has been independently rounded; hence, the sums of parts may differ slightly from the totals. Percentages are based on unrounded figures.

Source: Computed by the Statistical Bureau of the Metropolitan Life Insurance Company from data published by the Bureau of the Census and the National Vital Statistics Division.

During the past decade the white population increased by 23,682,000, reflecting both the excess of births over deaths and the addition of more than 2,700,000 through migration. The gain of 4,315,000 in the nonwhite population, however, was due entirely to their high rate of natural increase. In fact, there was a net out-migration of 23,000 nonwhite persons, a result of increases in our Armed Forces and their dependents overseas exceeding civilian in-migration.

In every region of the country except the South, the recent rate of growth was greater for the nonwhite than for the white population. Nevertheless, all but three of the southern States experienced gains in nonwhite population; the largest relative increases, ranging from about 35 percent to nearly 50 percent, occurred in Maryland, Delaware, Florida, and the District of Columbia. Moreover, in 1960 the nonwhites still comprised as much as 20.9 percent of the total population in the South. Elsewhere, this proportion was exceeded only in Alaska and Hawaii.

Migration has played an important role in the geographic variations in growth of our white and nonwhite population. As may be seen in the accompanying table, 28 States and the District of Columbia lost white population through migration during the 1950's. Included are all 11 States in the West North Central and East South Central divisions, as well as Illinois, Wisconsin, Arkansas, and Oklahoma. The net out-migration of white persons was even greater in Pennsylvania and West Virginia, which sustained losses of 547,000 and 406,000, respectively.

The gains in white population through migration were concentrated largely in two States. California was first in this respect, with a net increase of 2,789,000 migrants, followed by Florida, which had an influx of 1,517,000. Four other States—New Jersey, Arizona, Maryland, and Ohio—also gained substantial numbers of white persons through migration in the 1950's.

The pattern of migration of our nonwhite population, by contrast, has been almost entirely a movement of Negroes away from the Deep South to the large urban centers in the Northeast and in California. Mississippi experienced the largest exodus of nonwhite individuals and families; its loss of 323,000 such persons by migration during the 1950's exceeded the natural increase of population by a considerable margin. The volume of net out-migration was also substantial in the Carolinas, Georgia, and Alabama, each State losing more than 200,000.

Florida was the major exception to the general pattern in the South, attracting about 100,000 more nonwhite migrants than it lost. However, the increases in nonwhite population through migration were even larger in six highly industrial-

ized States outside the South, namely, California, New York, Illinois, Ohio, Michigan, and New Jersey.

As a result of these population changes, three States outside the South — New York, California, and Illinois—each now has over one million nonwhite residents. In fact, New York City alone had 1,141,322 in 1960, a greater number than in any State except California, Texas, and North Carolina.

Our nonwhite population has been slowly but steadily diffusing throughout the country. Between 1950 and 1960, the South's share of the total nonwhite population declined from 64 to 56 percent. In the years ahead, this proportion is expected to continue downward as additional thousands of Negro families move to the big cities in the North and the West.

## Factors in Mortality From Cerebral Vascular Disease*

VASCULAR LESIONS of the central nervous system resulting from arteriosclerotic degeneration or hypertension are a major cause of death in the United States. In 1960, there were about 193,000 deaths attributed to this cause—mainly cerebral hemorrhage, embolism, and thrombosis—which accounted for one fifth of the total mortality from the cardiovascular-renal diseases and for 1 in every 9 deaths from all causes combined.

All but 3 percent of the deaths from cerebral vascular disease occur at ages 45 and over, and no less than half are among persons at ages 75 and over. The death rate from this disease rises rapidly with advance in age, as may be seen in the accompanying table which shows data for 1959, the latest available in detail. Among white males, for example, the death rate at ages 65-74 was 13 times that at 45-54 years, and at ages 85 and over it was 7 times the rate at ages 65-74.

Among white persons, the death rate from cerebral vascular disease is somewhat higher for males than for females at all ages combined; the sex ratio of the mortality varies with age. In 1959, the excess mortality among men, as compared with women, was 33 percent at ages 55-64 but decreased to 11 percent at ages 75-84. At ages 85 and over the rate among white men was 12 percent below that among white women, but this may reflect the higher average age of women in this advanced age group. Contrary to the experience for white persons, among nonwhites at ages 45-64 the rate for men was slightly lower than that for women, the ratio of male to female mortality increasing slightly with age until age 85.

The cerebral vascular disease

*This article is based on a paper, "Characteristics and Trends of Cerebral Vascular Disease," by Herbert H. Marks, Assistant Statistician, Metropolitan Life Insurance Company, presented at the annual meeting of the American Psychopathological Association, New York, February 1960, and published in the volume *Psychopathology of Aging*, edited by Paul H. Hoch, M.D., and Joseph Zubin, Ph.D.

death rate is markedly higher among nonwhite than among white persons at ages under 75. This excess mortality probably reflects mainly the higher frequency of hypertension in Negroes. At ages 75 and over, the mortality rates for nonwhite persons are not reliable because of misstatements of age and the questionable quality of certification of cause of death.

That both overweight and elevated blood pressure have an adverse effect on mortality from cerebral vascular disease has been clearly shown in several large-scale mortality investigations of insured persons. The most recent of these studies—the Build and Blood Pressure Study, 1959, by the Society of Actuaries—investigated the mortality experience among persons selected for Life insurance after medical examination, who at that time had no significant impairments other than overweight or elevated blood pressure. Compared with mortality from cerebral vascular disease among all male standard risks, the excess mortality from this cause associated with varying degrees of overweight was as follows:

| Degree of Overweight | Excess Mortality |
|---|---|
| Slight | 16 percent |
| Moderate | 36 percent |
| Severe | 83 percent |
| Obese | 115 percent |

Even sharper increases in the mortality from cerebral vascular disease were associated with elevation of blood pressure. Thus, for persons with moderate elevation in both systolic and diastolic pres-

**MORTALITY FROM VASCULAR LESIONS OF CENTRAL NERVOUS SYSTEM**
By Color, Sex, and Age. United States, 1959

| Age Period (Years) | Death Rates Per 100,000 Population | | | | | Percentage | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total Persons | White | | Nonwhite | | Male of Female Rate | | Nonwhite of White Rate | |
| | | Males | Females | Males | Females | White | Nonwhite | Males | Females |
| All Ages*.. | 83.0 | 83.4 | 72.4 | 145.7 | 146.0 | 115 | 100 | 175 | 202 |
| 45-54.. | 48.6 | 41.2 | 32.8 | 155.3 | 159.9 | 126 | 97 | 377 | 488 |
| 55-64.. | 150.9 | 143.0 | 107.8 | 431.7 | 437.5 | 133 | 99 | 302 | 406 |
| 65-74.. | 515.2 | 539.5 | 421.8 | 1,090.1 | 1,048.5 | 128 | 104 | 202 | 249 |
| 75-84.. | 1,517.8 | 1,613.8 | 1,456.9 | 1,441.4 | 1,406.1 | 111 | 103 | 89 | 97 |
| 85 and over | 3,810.6 | 3,729.2 | 4,247.2 | 1,792.7 | 1,988.0 | 88 | 90 | 48 | 47 |

*Adjusted on basis of total population, United States, 1940. Includes ages under 45.
Sources of data: Reports of the National Vital Statistics Division, National Center for Health Statistics, and Bureau of the Census.

sures (138-147 mm. and 83-92 mm., respectively) at time of medical examination, the cerebral vascular death rate was more than two and a half times that for standard risks. For persons with higher blood pressures (148-177 mm. systolic and 93-102 mm. disastolic) the mortality rate was nearly 6 times that for standard risks. The study showed further that the excess mortality from cerebral vascular disease was especially large among persons who were overweight and also had elevated blood pressure.

Data indicating the effect of heredity on mortality from cerebral vascular disease are available from other Life insurance follow-up studies. In the Impairment Study, 1951, by the Society of Actuaries, it was found that among standard insured risks in whose immediate family there were two or more cases of cardiovascular-renal disease before age 60, the mortality from cerebral vascular lesions was 69 percent higher than that among standard risks as a whole.

As already noted, a large part of the total mortality from cerebral vascular disease occurs at advanced ages, and results from irreversible changes about which little or nothing can be done. There are, however, a significant number of people who become disabled or die at the less advanced ages. In the present state of knowledge, the most effective ways to reduce premature death or disability from cerebral vascular lesions are measures which delay the onset or retard the progression of hypertension or arteriosclerosis. These measures include weight control, sensible living health habits, periodic medical examinations, and prompt care of medical emergencies. There is also need to improve methods and resources for the treatment and rehabilitation of patients with cerebral vascular disease, especially those with residual effects of acute episodes.

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## Correction

All the death rates included in the article "International Mortality Trends at the Older Ages," which appeared in the STATISTICAL BULLETIN for September 1961, should be related to a population base of 1,000. Several of the death rates on page 1 of the text were incorrectly stated to be per 100,000 population.

## MORTALITY FROM SELECTED CAUSES

Industrial Policyholders, Metropolitan Life Insurance Company
September 1961

| Causes of Death | Annual Rate per 100,000 Policyholders* | | | | |
|---|---|---|---|---|---|
| | September | | Year to Date | | |
| | 1961 | 1960 | 1961 | 1960 | 1959 |
| All Causes | 652.2 | 618.9 | 697.0 | 687.8 | 673.4 |
| Tuberculosis (all forms) | 4.2 | 5.2 | 5.4 | 5.8 | 5.8 |
| Communicable diseases of childhood | — | — | 0.1 | 0.1 | 0.1 |
| Acute poliomyelitis | 0.1 | 0.3 | † | 0.1 | 0.1 |
| Malignant neoplasms | 149.8 | 134.4 | 149.8 | 143.7 | 142.8 |
| Digestive system | 47.7 | 46.8 | 48.3 | 48.3 | 48.7 |
| Respiratory system | 25.6 | 21.3 | 24.0 | 21.8 | 21.5 |
| Diabetes mellitus | 14.1 | 14.3 | 15.7 | 15.7 | 15.1 |
| Diseases of the cardiovascular-renal system | 337.9 | 324.7 | 373.7 | 367.5 | 360.0 |
| Vascular lesions, central nervous system | 65.7 | 61.5 | 67.7 | 68.9 | 68.6 |
| Diseases of heart | 246.8 | 236.6 | 277.8 | 271.4 | 264.9 |
| Chronic rheumatic heart disease | 10.0 | 9.5 | 11.9 | 11.2 | 10.9 |
| Arteriosclerotic and degenerative heart disease | 201.1 | 193.6 | 224.5 | 217.7 | 210.2 |
| Diseases of coronary arteries | 116.5 | 112.9 | 130.8 | 127.8 | 125.6 |
| Hypertension with heart disease | 24.6 | 23.3 | 28.9 | 30.0 | 31.4 |
| Other diseases of heart | 11.1 | 10.3 | 12.5 | 12.4 | 12.4 |
| Nephritis and nephrosis | 5.5 | 6.9 | 6.7 | 7.0 | 7.4 |
| Pneumonia and influenza | 13.7 | 12.6 | 18.0 | 23.5 | 19.2 |
| Complications of pregnancy, childbirth | 0.6 | 0.8 | 0.7 | 0.7 | 0.7 |
| Suicide | 5.5 | 5.7 | 6.3 | 6.3 | 6.6 |
| Homicide | 3.6 | 3.6 | 3.0 | 2.9 | 2.8 |
| Accidents—total | 37.9 | 37.7 | 33.5 | 33.1 | 33.7 |
| Motor vehicle | 17.2 | 14.9 | 14.2 | 13.7 | 14.3 |
| All other causes | 84.8 | 79.6 | 90.8 | 88.4 | 86.5 |

*These death rates relate to persons insured under Weekly or Monthly premium-paying Industrial policies and Monthly premium-paying Ordinary policies for small amounts of insurance.
†Less than 0.05.
Note: Rates for 1960 and 1961 are provisional.

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# MORTALITY FROM ALL CAUSES

INDUSTRIAL POLICYHOLDERS · METROPOLITAN LIFE INSURANCE COMPANY




| | (DEC) | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEPT | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1960 | | 7.2 | 7.6 | 8.0 | 6.9 | 6.9 | 6.5 | 6.3 | 6.3 | 6.2 | 6.1 | 6.2 | 6.3 |
| 1961 | | 7.4 | 7.5 | 7.7 | 7.1 | 6.8 | 6.8 | 6.5 | 6.5 | 6.5 | | | |

P.F.M.—Printed in U.S.A.—29980—(10-61)

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